

## **LISTING OF THE CLAIMS**

**X** This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims:

1. (Original) A method for isolating nucleic acid molecules from tissue samples comprising:
  - i) treating a tissue sample with at least one enzyme for tissue dissociation;
  - ii) adding a lytic solution;
  - iii) isolating nucleic acid molecules.
2. (Original) The method of claim 1, further comprising a step of applying hydrodynamic shear force to the product of step (i).
3. (Original) The method of claim 2, the method comprising:  
incubating in a first chamber a mixture of: at least one tissue sample, at least one enzyme for dissociation of the tissue sample, and buffer solution;  
disrupting the tissue sample in a second chamber acting as tissue disruption channel;  
lysing cells isolated from the tissue disruption channel in a third chamber; and  
collecting and isolating desired nucleic acid molecules and/or proteins in a fourth chamber.
4. (Original) The method of claim 3, wherein the incubation in the first chamber is carried out at a constant temperature.
5. (Currently Amended) The method of ~~claims 3-4~~ claim 3, wherein hydrodynamic shear force applied within the tissue disruption channel gradually reduces the tissue sample size until it is fully disrupted and cells are released.
6. (Cancelled)

7. (Currently Amended) The method of ~~claims 1-6~~ claim 1, wherein the enzyme for tissue dissociation is a protease, cellulase and/or lipase.

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Currently Amended) A system device for isolation of cells and/or nucleic acid molecules from tissue samples, the system device comprising an enzymolytic tissue dissociation chamber and a tissue disruption channel.

16. (Cancelled)

17. (Currently Amended) The system device of claim 15, comprising:  
a first enzymolitic tissue dissociation chamber for incubation of a mixture of: at least one tissue sample, at least one enzyme for dissociation of the tissue sample, and buffer solution; and  
a second chamber acting as a tissue disruption channel.

18. (Currently Amended) The system device of claim 17 claim 15, further comprising a chamber for recovery of the isolated cells.

19. (Currently Amended) The system device of ~~claims 15-18~~ claim 15, comprising:

- a first enzymolitic tissue dissociation chamber for incubation of a mixture of: at least one tissue sample, at least one enzyme for dissociation of the tissue sample, and buffer solution;
- a second chamber acting as a tissue disruption channel;
- a third chamber comprising a lytic solution;
- a fourth chamber for the collection and isolation of nucleic acid molecules and/or proteins ; and
- a fifth chamber for waste collection;

wherein the chambers are connected to each other.

20. (Currently Amended) The system device of ~~claim 19~~ claim 15, wherein the tissue disruption channel comprises:

- an inlet port;
- at least one region of constriction; and
- an outlet port.

21. (Currently Amended) The system device of ~~claims 15-20~~ claim 20, wherein the tissue disruption channel at the region(s) of constriction has a smaller cross-sectional area compared to the overall cross-sectional area of the disruption channel.

22. (Currently Amended) The system device of ~~claims 15-21~~ claim 15, wherein the enzymolytic tissue dissociation chamber accepts at least one tissue sample and at least one enzyme for tissue dissociation.

23. (Currently Amended) The system device of ~~claims 15-22~~ claim 15, wherein the enzymolytic tissue dissociation chamber is less than 100  $\mu$ l in volume.

24. (Cancelled)

25. (Cancelled)

26. (Cancelled)

27. (Currently Amended) The system device of ~~claim 22~~ claim 17, wherein the enzyme for tissue dissociation is a protease, a cellulase or a lipase.

28. (Cancelled)

29. (Cancelled)

30. (Cancelled)

31. (Currently Amended) The system device of ~~claims 15-30~~ claim 15, wherein the system device is a biological microelectromechanical system (bioMEMS) and/or a fully automated complete micrototal analytical system ( $\mu$ TAS).

32. (Currently Amended) The system device of ~~claims 15-31~~ claim 15, wherein the system device is disposable.

33. (Cancelled)

34. (Cancelled)

35. (Original) A method for cell isolation from tissue samples comprising:

- (a) treating a tissue sample with at least one enzyme for tissue dissociation;
- (b) applying hydrodynamic shear force to the product of step (a);
- (c) recovering the isolated cells.

36. (Original) The method of claim 35, further comprising: adding a lytic solution to the isolated cells.

37. (Currently Amended) The method of ~~claims 35-36~~ claim 35, further comprising:  
recovering nucleic acid molecules.

38. (Cancelled)

39. (Currently Amended) The method of ~~claims 35-38~~ claim 35, wherein the enzyme for  
tissue dissociation is a protease, cellulase and/or lipase.

40. (Cancelled)

41. (Cancelled)

42. (Cancelled)

43. (Cancelled)

44. (Cancelled)

45. (Cancelled)

46. (Cancelled)